**Project Management Plan**

**for**

**"LIBRARY MANAGEMENT SYSTEM"**

**Submitted to: Ewnetu E.**

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List of Students Participated in the Project

|  |  |  |
| --- | --- | --- |
| No. | Name | ID |
| 1 | Daniel kumilachew | DBU1401117 |
| 2 | Biruk Ashagre | DBU1401048 |
| 3 | Abdela Nesredin | DBU1400751 |
| 4 | Daniel Hailu | DBU1401119 |
| 5 | Biniyam Nibret | DBU1401987 |
| 6 | Kalkidan Zenebe | DBU1500138 |
| 7 | Tigist Ashenafi | DBU1402532 |
| 8 | Asregide Ferede | DBU1400928 |
| 9 | Daniel Baye | DBU1401105 |
| 10 | Dessalegne Mulat | DBU1401145 |
| 11 | Eliyas Aynekulu | DBU1402639 |
| 12 | Samuel Esubalew | DBU1402286 |

Contents

[3.2.1 Project manager 6](#_Toc125231315)

[3.2.2 Project-internal Functions 6](#_Toc125231316)

[3.2.3 Proj](#_Toc125231317)[1. Overview 1](#_Toc125231304)

[2. Objectives and Scope 1](#_Toc125231305)

[2.1 Project Objectives 1](#_Toc125231306)

[2.2Project Scope 3](#_Toc125231307)

[2.2.1 Included 3](#_Toc125231308)

[2.2.2Excluded 4](#_Toc125231309)

[3. Organization 4](#_Toc125231310)

[3.1 Organizational Boundaries and Interfaces 4](#_Toc125231311)

[3.1.1 Resource Owners 4](#_Toc125231312)

[3.1.2 Sub-contractors 4](#_Toc125231313)

[3.1.3 Suppliers 4](#_Toc125231314)[ect Team 7](#_Toc125231317)

[3.2.4 Steering Committee 8](#_Toc125231318)

[4. Schedule and Budget/Detail 8](#_Toc125231319)

[4.1 Work Breakdown Structure 8](#_Toc125231320)

[4.2 Schedule and Milestones 8](#_Toc125231321)

[4.3 Budget 12](#_Toc125231322)

[4.4 Development Process 13](#_Toc125231323)

[4.5 Development Environment 14](#_Toc125231324)

[5. Risk Management 15](#_Toc125231325)

[6. Sub-contract Management 15](#_Toc125231326)

[7. Communication and Reporting 16](#_Toc125231327)

[8. Delivery Plan 17](#_Toc125231328)

[8.1 Deliverables and Receivers 17](#_Toc125231329)

[9. Quality Assurance 18](#_Toc125231330)

[10. Configuration and Change Management 18](#_Toc125231331)

[11. Abbreviations and Definitions 19](#_Toc125231332)

[12. Revision/if you have done 19](#_Toc125231333)

# Tables

[Table 1: Major Project Objectives 2](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark3)

[Table 2: Project Suppliers 3](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark12)

[Table 3: Other Ongoing Projects 4](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark14)

[Table 4: Management Personnel' List 4](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark17)

[Table 5: Work-Personnel Relation 5](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark19)

[Table 6: Project Participants List 5](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark21)

[Table 7: Project Senate 6](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark23)

[Table 8: Milestone List 7](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark27)

[Table 9: Project Budget 7](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark29)

[Table 10: Tool\_ Milestone Relation 8](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark32)

[Table 11: Subcontract Management 9](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark35)

[Table 12: Communication Management 11](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark37)

[Table 13: Deliverable-main user Relation 12](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark40)

[Table 14: Revision 13](file:///D:\\BitJamp5\\Content\\s\\first%20draft%20for%20bura.docx" \l "_bookmark45)

# List of Figures, if any

Figure 1: project organization

# 1. Overview

Our country ethiopia libraries have many difficulties on automating the management of library resources. However, users seeks to offer librarys of all sizes a complete solution for succesfully managing and organizing their resources.

Users,library employees,and librarians are all intended users of the library management system.librarians wiil be able to manage the library resource,such as;its coolection of books,periodicals,megazinnes,mulltimidia,and other materials, using the systems user friendly interface.

So using this open opportunity, we planned this project to connect laybrarians with library resource. The benefit of our project is very diverse and valuable to our library. Our app lets libraryans acces and serch for library resource quickly. Also, library resources become easily access through our app over the internet. The extent of our app cover author,title,subject,or keywords,as well as reserve, renew,and request items online.

We estimated that our project development can take 8 months and collaborating with libraryaians can take 5 months. Total 13 months or 1 year and 1 month. The total cost to build the entire project, including cooperating with librerian, is 1,500,000.

Our project completion depends on the contract we do with librerian. This means after building our library management system , users must be registered into our system with the relevant information like phone number, photo and so on. So users can get what they want quickly and make acces through our system. .

# 2. Objectives and Scope

## 2.1 Project Objectives

Our main objective is to create a streamline and authomatethe management of library resource. The system will be used by library employees to carry out standard operations like catalogging,circulations,aqusition and reporting.

On the other hand, our system will also integrated with other library systems such as cataloging,enter library loan,and digital collections.

The library system managment is not adopted in our country. It enables us to establish srong library data mangment system And because there is no advanced supporting system .

The development of this project has a technological aspect: the adaptation of some technologies at the early stage of development in our country. However, we are the first to make these. So, there will be difficulties regarding new technology adoption, persuasion of librarians to work with us, establishing online existence on the internet and social media, and fraudulent activities.

**Prioritize the project objectives:**

Table1:Prioritize the project objectives:

|  |  |  |
| --- | --- | --- |
| Project Objectives | Priority | Comment/Description/Reference |
| Functional Objectives: | 1 |  |
| Book cataloging |  | The system should provide librarian to enter and maintain data for all library resources. |
| circulation |  | The system should manage the circulationn of library resources,including check-in,check-out and holds. |
| Search and retival |  | A user should be able to browse and serch for bools easily through library management system based on the book details or their author,subject,titel,and othe attributes. |
| Integration with external service |  | The should also be able to integrate with external services like online bookstores,online catalogs,databases,etc |
| Business Objectives: | 2 |  |
| authomation |  | The primary objective of a system is too authomate the procces involved in managing a library,such as cataloging,circulations and acquisition. |
| Efficiency |  | A system should help the library staff to perform their tasks more efficiently, which enter saves time and money for the library and users. |
| User satsifaction |  | The system should be easy to use and provide posetive experriance for library users ,including students,faculty,and researchers. |
| Data analaysis |  | The system should provide analytics and reporting capability to help library adminstrators make informed dicisionns about the librarys collection and services. |
| Technological Objectives: |  |  |
| Scalability |  | The system should be able to handle a large volume of data and users as the library grows. |
| Integration |  | Be able to integrate with other library system,such as interlibrary loan system,digital repository system and discovery systems. |
| Security |  | Be secuire and protect the data of the library and its users. |
| Quality Objectives: | 3 |  |
| Relability |  | System should be realiable and avaliable to users at all times |
| Usability |  | System should be easy to use and navigate for all users. |
| Accuracy |  | The sysytem should be aacurately reflect the librarys collection and user data. |
| Constraints | 4 |  |
| Budget constraints |  | The project would require a significant investment in software and pottentially to manage the system. |
| User interface and ease of use |  | The system shuld be user-friendly for both library staff and users,easy to navigate screens,clear instructions, and minimal training requirments |

# 

# 2.2Project Scope

### 2.2.1 Included

The system we develop will give users the library information This is done by making librarian make an account in our system.

* Parts for users / readers
* User registration: system should allow readers to register for a library card and create a user account
* Searching: the syste should allow readers to search for library materials
* Requesting: the system should allow readers to request materials that are cheked-out or not availabele in the library collections
* Notification: system should notify readers of overdue materials, available holds,and other relevant information
* Interlibrary loan(ill): sysytem should allow reraders to request materials from other libraries through an interlibrary loan service
* For library staff:
* Cataloging: the system should allow library staff to manage and organize library materials
* Circulation: system should manage circulation of library materials
* Search capability: system should provide search mechanisms to help users find the materials they need
* Reporting: system should provide analytics and porting capability to help library admnistrators.
* Electronics resource management: system should mange electronic resource including e-books and data bases.

### 2.2.2Excluded

Our system will deliver the above services for librarians, except

* Physical security
* Building maintanance
* System admnistration: like sytem backups,updates and security patches
* Network infrastructure:
* Hardware procurement:like desktop computers,laptops,etc

# 3. Organization

Our organizational development process is functional, where each library staff or members has one clear superior.

We prefer a functional organization because it is suitable for our project development, and everyone knows their role and works effectively.

## 3.1 Organizational Boundaries and Interfaces

Our organizational environment includes readers, who are a source of income for our project, and librarians, which are a source of services for our customers (users) and the project. Our project depends on the organizational environment. We must collaborate with librarians and open some per cent share of our organization to get enough money to complete our project.

### 3.1.1 Resource Owners

The resource owner is typically the library (or organiization in which the library is housed) that owns and manage the data in the resource ( e.g. books,journals,multimedia resources,user records,etc) being manged by the management system. The resourse owners has the authority to make a decisions how their resourse are used,accessed,and organized with in a system.

### 3.1.2 Sub-contractors

Our sub-contractors are external service providers or professionals who are hiered to fulfill specific tasks or components of the projects. They may work independently or as part of a team and are genarly responsible for delivering their assigned work on time and meeting the project quality standards.

Subcontractors may include software developers,UI/UX designer and database adminstrators. found in Ethiopia. We connect them with customers, and they provide service to them.

### 3.1.3 Suppliers

Table 2: Project Suppliers

|  |  |  |
| --- | --- | --- |
| Company | Contact | Deliverable |
| SirsiDynix |  | Integrated management system |
|  |  |  |
| Company | Contact |  |
| Ex libris (proQuest) |  | Alma |
|  |  |  |
| Company | Contact |  |
| OCLC |  | ILS platform |
|  |  |  |
| Company | Contact |  |
| Ethio tele |  | Provides payment API used in Ethiopia |
|  |  |  |
| Company | Contact |  |
| Axiell |  | RFID technology implementation |
|  |  |  |

**3.1.4 Project Organization**

**Project Manager**

Daniel Kumilachew

**User Liaison Officer**

-Abdelah Nesredin

**Quality Assurance Manager**

Biruk Ashagre

**Tester**

-Daniel Hailu

- Samuel Esubalew

**Researcher**

-Biniyam Nibret

**Documentater**

-Tigist Ashenafi

-Daniel Daye

**Programmer**

-Biruk ashagre

-Abdelah Nesredin

**Risk Manager**

-Asregide Ferede

**Designer**

-Eliyas ayinekulu

-Dessalegne Mulat

**Maintenance**

Kalkidan Zenebe

**DBA**

Biruk Ashagre

### 3.2.1 Project manager

|  |  |
| --- | --- |
| **Role** | **Name** |
| Project Manager | Daniel kumilachew |
| Technical project manager | Biruk Ashagre |

### 3.2.2 Project-internal Functions

In the library management system project, the team will consist of software design and developers, a tester, a project manager, a requirement elicitation analyzer and a maintenance worker.

* The project manager:
* Develops a project plan.
* Will manage deliverables according to the plan.
* Will recruit project staff.
* Lead and manage the project team.
* Determine the methodology used on the project.
* Will establish a project schedule and determine each phase.
* Assign tasks to project team members.
* Provide regular updates to upper management.
* will be responsible for overseeing the overall project and ensuring
* Software Testers: are responsible for the quality of software development and deployment. They perform automated and manual tests to ensure the software created by developers is fit for purpose.
* Quality assurance manager: works with the functional analyst and solution Architect to convert the requirement and design document into a set of testing cases and scripts, which can be used to verify that the system meets the client's needs.
* Developer: The developer is responsible for building the solution using a computer programming language.
* Analyst/Tester: the test analyst role is responsible for initially identifying and subsequently defining the required test, monitoring the test coverage and evaluating the overall quality experienced when testing the target test items, also gathering and managing the test data, and assessing the outcome of each test cycle
* Designer: Responsible for designing The UI and the system in a way that is easy to use.
* Analyst: responsible for ensuring that the requirements of the business clients are captured correctly before a solution is developed and implemented.
* The maintenance workers: will work if there is some kind of problem or update that should be fixed or updated after deployment.
* Project Team: the project team consists of the full-time and part-time resources assigned to work on the deliverables of the project.

**Table 5: Work-Personnel Relation**

|  |  |  |
| --- | --- | --- |
| **Roles** | **Team Member** | **Comment** |
| Project Manager | Daniel kumilachew | Managing overall project |
| User Liaison Officer | Abdelah Nesredin | Reader Liaison |
| Risk Manager | Asregide ferede | Managing the risk |
| Designer | -Eliyas Aynekulu  - Dessalegn Mulat | Designing Architect / Design |
| Quality Assurance Manager | Biruk Ashagre | Managing quality |
| Programmer Database Manager | -Biruk Ashagre  -Abdelah Nesredin | Programming / Database Managing |
| Testing & Tester | Daniel Hailu | Testing & Tester |
| Maintenance | Kalkidan Zenebe | Mantaining |

### 

### 3.2.3 Project Team

Table 6: Project Participants List

|  |  |  |
| --- | --- | --- |
| **Name** | **Availability** | **Remark** |
| Biruk Ashagre | yes | Active |
| Abdelah Nesredin | yes | Active |
| Daniel Kumilachew | yes | Active |
| Asregide Ferede | yes | Active |
| Kalkidan Zenebe | yes | Active |
| Tigist Ashenafi | yes | Active |
| Daniel Hailu | yes | Active |
| Binyam Nibret | yes | Active |
| Eliyas Ayinekulu | yes | Active |
| Dessalegn Mulat | yes | Active |
| Daniel Baye | yes | Active |
| Samuel Esubalew | yes | Active |

### 3.2.4 Steering Committee

The Steering Committee (SteCo) of the project handles all legal requirements. It ensures the project is legal and complies with Ethiopia's software, electronics payment and users information governing law.

Table 7: Project Senate

|  |  |  |
| --- | --- | --- |
| Organization | Name | Remark |
| Our lawyers | Ashenafi bekele | He is active |

# 4. Schedule and Budget/Detail

The schedule is entirely based on the due date planned for delivery. The dates will be adjusted according to the deadlines of the organizations. The team will finish all documents at least 7 days before the due date given by the client. The schedule also includes the items which are not supposed to be delivered but are necessary for the entire project. The schedule is subject to change due to changes in the client requirements or earlier delivery requests.

## 4.1 Work Breakdown Structure

In our project, the WBS might iclude the following level:

1.Project level: this the highest level of the WBS and includes the overal project objectives and deliverables

2.Phase level: the level breaks down the project into phases such as planning,designing,development,testing and implementation.

3. Activity level: this level breaks down each phases into specific activities that need to be completed

4.Work package level: breaks down each level activity into smaller more managable work package that can be assigned to indvidual team member

The implementation strategy for the Library Management System will

Involve the following steps:

* Setting up the development environment and installing the necessary tools and technologies
* Start developing the system using agile development based on the requirements gathered during the elicitation and analysis phase
* Testing the system to ensure it is functional and reliable, deploying the system to a production environment and providing training to store owners and employees on how to use the system
* Providing ongoing support and maintenance to ensure the system is up to date and functioning properly.

## 4.2 Schedule and Milestones

The project will take almost one year or 12 months to complete. It starts from the project concept paper and proposal up to the days of data requirements collection, analysis of the data requirements finding, design, implementation testing and validation of the proposed web-based application, as well as defending.

* Requirement elicitation and analysis: 1 months.
* Design: 1 months.
* Implementation: 6 months.
* Collaborating with tour agents in Ethiopia: 4 months
* Testing: 15 days.
* Deployment: 15 days.

Table 8: Milestone List

|  |  |  |  |
| --- | --- | --- | --- |
| **Milestones** | **Description** | **Milestone Criteria** | **Planned Date(finished)** |
| M0 | Start Project | Budget Release | 06-07-2023 |
|  | Project objectives and scope defined | SRS reviewed organizations identified proposal reviewed | 22-07-2023 |
| M1 |  |  | 01-08-2023 |
|  | Project Life Cycle Objectives | The scope and concept described | 10-08-2023 |
| M2 |  |  | 25-08-2023 |
|  | Project Life Cycle Architecture | Requirements agreed, project plan reviewed, resources committed | 29-08-2023 |
| M3 | UI |  | 15-09-2023 |
|  | UI Implemented | Implementing UI on our website version of our system | 25-09-2023 |
| M4 | Profile and Account |  | 03-10-2023 |
|  | Login, registration and profile for staffs | login registration and profile functionality for staffs will be coded | 10-10-2023 |
|  | Testing staffs login registration and profile functionality | login registration and profile functionality tested | 15-10-2023 |
|  | Integrating users' login, registration and profile | Login, registration and profile functionality will be integrated into the entire system | 18-10-2023 |
|  | Login, registration and profile for users | login registration and profile functionality for users will be coded | 22-10-2023 |
|  | Testing users' login registration and profile | login registration and profile functionality tested | 26-10-2023 |
|  | Integrating users login registration and profile | Login, registration and profile functionality will be integrated into the entire system | 30-10-2023 |
| M5 | Test round 1 |  | 12-11-2023 |
|  | Testing login functionality | Testing the entire system after integration of profile and account | 21-11-2023 |
| M6 | Making agreement |  | 05-12-2023 |
|  | Collaborating and registering them | Making an agreement with users and inserting their data into our database | 11-12-2023 |
| M7 | Information gathering |  | 12-01-2024 |
|  | Information Collecting | Collecting information from variety of sources like online sources, e-books,etc | 29-01-2024 |
| M8 | find functionality |  | 11-02-2024 |
|  | Find users functionality | Developing code for finding users from our database | 13-02-2024 |
|  | Testing Find users functionality | Functionality reviewed and Making sure it's stable | 14-02-2024 |
|  | Integrating Find users functionality | A new tab called "users" in our website version | 16-02-2024 |
|  | Discover functionality | Developing code for finding or searching users book from our database | 17-02-2024 |
|  | Testing discover functionality | Functionality reviewed and Making sure it's stable | 27-02-2024 |
|  | Integrating discover functionality | A new tab called "discover" is integrated into our website version | 30-02-2024 |
| M9 | More features |  | 4-03-2024 |
|  | Rating functionality | Code developed for accepting reviews from readers about specific books and displaying them to other users and the staffs. | 12-03-2024 |
|  | Integrating rating | Rating system integrated into the system | 27-03-2024 |
| M10 | Test round 2 |  | 11-04-2024 |
|  | Beta version | The first fully functional test version of our system released on google play, the app store and our website | 15-04-2024 |
|  | Fixing Beta version | Collected system comments and improvements from users | 17-04-2024 |
| M11 | Final release |  | 9-05-2024 |
|  | Alpha version release | Released a fixed version of the beta version on google play, the app store, and on our website | 29-05-2024 |

## 

## 4.3 Budget

Table 9: Project Budget

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Category** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **M0-**  **M1** | **M1-**  **M2** | **M2-**  **M3** | **M3-**  **M4** | **M3** | **M4** | **M5** | **M6** | **M7** | **M8** | **M9** | **M10** | **M 11** |
| Human  Resources (internal) |  | 4500 | 50,000 | 40,000 | 80,000 | 30,500 |  |  |  |  |  |  |  |
| Human Resources  (external) |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Category** |  |  |  |  |  |  |  |  |  |  |  |  |
| **M0-**  **M1** | **M1-**  **M2** | **M2-**  **M3** | **M3-**  **M4** | **M4** | **M5** | **M6** | **M7** | **M8** | **M9** | **M10** | **M11** |
| Purchases |  | 45000 | 150,000 |  |  |  |  |  |  |  | 20,000 |  |
| Tools to be used |  |  | 34,450 | 55,000 |  |  |  |  |  |  |  | 50,000 |
| personall costs | 1000 |  |  |  |  |  | 300,000 |  |  |  |  |  |
| Training and consulting cost |  |  |  |  |  |  | 60,000 |  | 34,000 |  |  |  |
| Review activities | 11,560 |  |  |  |  |  |  |  | 30,500 | 50,000 | 35,400 |  |
| Other/ if any |  |  |  |  |  |  |  |  |  | 30,000 |  |  |
| Contingency cost | 30,000 |  |  | 40,000 |  |  |  |  | 70,000 |  |  | 20,000 |
| **Total** | 42,560 | 45,000 | 184,450 | 95,000 |  |  | 360,000 |  | 134,500 | 80,000 | 55,400 | 70,000 |

## 4.4 Development Process

The agile approach tries to define an overall system plan quickly, develop and release software quickly, and then continuously revise the software to add additional features. In our project, we will examine how the values, principles and practices of agile modelling, including extreme programming (XP), shape the development of our system. The most important of the principles is user satisfaction by giving rapid and continuous delivery of small and useful software. The software delivery happens at regular intervals, possibly on a weekly basis. In our project, the aim is to test from the perspective of the client as early as possible in the development process.

The development team gets more details about the requirements to be developed from the user. They develop and test that piece of software, then deliver it to the user/reader, and iteration completes here.

At the beginning of the next iteration, the reader gives feedback and prioritizes the remaining requirements, and the same cycle is repeated. This loop continues until the users is satisfied with the software they have and there are no more requirements from the user. All these factors become software qualitative and efficient (Agile Methodology Essay 2, 2012).

XP teams create and monitor their own iteration plans in collaboration with the users. The client makes stories and prioritizes them based on their business value. Extreme Programming improves this software project in five essential ways; communication, simplicity, feedback, respect, and courage. Extreme Programmers communicate with their users and fellow programmers and get their feedback. They implement suggested changes and deliver the system to the users as early as possible. The developers divide the tasks themselves as they work and measure progress for each iteration (Ambler, 2002).

## 4.5 Development Environment

The software and hardware requirements for the library management system website consist of the following:

Table 10: Tool\_ Milestone Relation

|  |  |  |
| --- | --- | --- |
| **Item** | **Applied fo**r | **Available in** |
| Methods | | |
| Use Case | Requirements capturing | M0 |
| Prototype | Design | M2 |
| Tools | | |
| Visio | Design | M2 |
| MS Word | Documentation | M1 |
| Photoshop | Photo editing and retouching | M3 |
| Illustrator | Graphics design for website interface | M3 |
| Visual Studio | For coding the website version of our system | M8,M4,M3 |
| Windows 10, 2022H | The operating system we use to install IDE and Compilers | M1-M11 |
| **Hardware** | | |
| Computer | for programming | M5,M10 |
| Server | Used to host the web version  Of our project | M4,M8 |
| **Languages** | | |
| **Item** | **Applied for** | **Available in** |
| HTML | Design,Programming language to develop website version | M2 |
| React and Angular | For the front end of our web version | M4,M8,M3 |
| Python | For the Backend of our web version | M4,M8 |
| C++ | Web backend | M4,M8 |

# 

# 5. Risk Management

To mitigate the risks associated with the project, we will implement the following risk management plan:

* Regularly monitor the progress of the project and identify potential risks
* Develop contingency plans to address potential risks
* Regularly communicate with the project team to identify and address any issues that may arise
* Periodically review the project budget and identify any possible cost overruns

# 6. Sub-contract Management

|  |  |  |
| --- | --- | --- |
| **Sub-contractors** | | **Sub-contracted work** |
| **Company** | **Contact** |
| SirsiDynix |  | Provides integrated library management system known as symphony |
| Ex libris (proQuest) |  | Provides library management system called alma |
| OCLC |  | Provides world share management service,integrated library service plat form |
| Axiell |  | Provides library mangment system like RFID technologie implementation |

# 7. Communication and Reporting

Table 12: Communication Management

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Communication type** | **Method / Tool** | **Frequency/**  **schedule** | **Information** | **Participants / Responsible** |
| **Internal Communication:** | | | | |
| Project Meetings | Tele conference | Weekly and on event | Project status, problems, risks, and changed  requirements | Project Manager, Client Liaison officer, Risk Manager, Designer, Programmer, Database Manager |
| Sharing of project data | Shared Project Server | When available | All project documentation and reports | Project Manager, Programmer, Database Manager |
|  |  |  |  |  |
| Milestone Meetings | Tele conference | Before milestones | Project status (progress) | Project Manager, Programmer, Database Manager, Testing & Tester, Designer |
| Final Project Meeting | Tele conference | M6 | Wrap-up Experiences | Project Manager, Maintenance, Tester, Programmer, Database Manager |
| **External Communication and Reporting:** | | | | |
| Project Report | Excel sheet | Monthly | Project status   * progress * forecast * risks | Project Manager, Quality Assurance Manager |
| SteCo Meetings | Tele conference | Monthly |  | Project Manager, Programmer, Database Manager |

# 8. Delivery Plan

Our project will deliver to our users or readers based on the scheduled time we requested at the beginning of the document, which is 13 months. And it is delivered in the form of website versions.

## 8.1 Deliverables and Receivers

Table 13: Deliverable-main user Relation

|  |  |  |  |
| --- | --- | --- | --- |
| Ident. | Deliverable | Planned Date | Receiver |
| D1 | user Registration Portal |  | staff |
| D2 | users registration portal |  | staff |
| D3 | Find books |  | users |
| D4 | Rating |  | users and staff |
| D5 | Users profile |  | users |
| D6 | staff profile |  | staff |

# 9. Quality Assurance

The quality assurance mechanism focuses on improving software development to prevent problems before they become significant issues. And verified by the third-party organization, it focuses on:

* Software's portability
* Software's usability.
* Software's reusability.
* Software's correctness.
* Software's maintainability.
* Software's error control.

To access the quality of our library managment system, we follow the following

Measurement:

* Regular code reviews to ensure it is functional and reliable.
* Using automated testing tools to catch any potential issues.
* Regular code reviews to ensure the code is high quality and follows best practices.
* User acceptance testing to gather feedback from users and staff and identify areas for improvement.

# 10. Configuration and Change Management

Our software development process model is also called the state of dynamism. It is a suitable model to handle users requirement change and integrate it into the development model.

# 11. Abbreviations and Definitions

**WBS** - to represent work breakingdown structure

**UI**  -user interface

**XP**- extreme programing

**SteCo**- steering comitte

**API**  -application programming interface

# 12. Revision/if you have done

Table 14: Revision

|  |  |  |  |
| --- | --- | --- | --- |
| Rev. Ind. | Page (P)  Sec. (C) | Description | Date |
| 1 |  | original version | 19/06/2024 |
| 2 |  |  |  |
| 3 |  |  |  |

**13. Refrences**

**Books**

* Ian\_sommervile\_software\_engineering\_9th\_edition\_addison\_wesley
* Code complete: A practical hand bookof software construction

**Links**

* https://www.slideshare.net/
* https://ebookily.net/